SEQUENCE LISTING

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<120> EUKARYOTIC PEPTIDE UPTAKE SYSTEM FOR TRANSPORTING ENKEPHALINS

<130> 1046-PCT-00

<140> 09/914541
<141> 2001-08-29

<150> PCT/US00/05158
<151> 2000-03-01

<150> 60/122,312
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<170> PatentIn Ver. 2.1

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Ala Thr Thr Asp Glu Glu Asp Arg Asp Pro Glu Ser Gln Lys Phe Asp
     50                  55                  60

Arg His Ser Ile Gln Glu Glu Gly Leu Val Trp Lys Gly Asp Pro Thr
 65                  70                  75                  80

Tyr Leu Pro Asn Ser Pro Tyr Pro Glu Val Arg Ser Ala Val Ser Ile
                 85                  90                  95

Glu Asp Asp Pro Thr Ile Arg Leu Asn His Trp Arg Thr Trp Phe Leu
            100                 105                 110

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Cys Tyr Pro Ile Gly Arg Ile Leu Ala Leu Leu Pro Asp Trp Lys Cys
145                 150                 155                 160

Ser Lys Val Pro Phe Phe Asp Leu Asn Pro Gly Pro Phe Thr Lys Lys
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Glu His Ala Val Val Thr Ile Ala Val Ala Leu Thr Ser Ser Thr Ala
            180                 185                 190

Tyr Ala Met Tyr Ile Leu Asn Ala Gln Gly Ser Phe Tyr Asn Met Lys
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Phe Gly Thr Gln Ser Gly Leu Gly Ala Leu Pro Ile Thr Phe Asp Tyr
325 330 335

Thr Gln Val Ser Gln Ala Met Ser Gly Ser Val Phe Ala Thr Pro Phe
340 345 350

Tyr Val Ser Ala Asn Thr Tyr Ala Ser Val Leu Ile Phe Phe Val Ile
355 360 365

Val Leu Pro Cys Leu Tyr Phe Thr Asn Thr Trp Tyr Ala Lys Tyr Met
370 375 380

Pro Val Ile Ser Gly Ser Thr Tyr Asp Asn Thr Gln Asn Lys Tyr Asn
385 390 395 400

Val Thr Lys Ile Leu Asn Glu Asp Tyr Ser Ile Asn Leu Glu Lys Tyr
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Lys Glu Tyr Ser Pro Val Phe Val Pro Phe Ser Tyr Leu Leu Ser Tyr
420 425 430

Ala Leu Asn Phe Ala Ala Val Ile Ala Val Phe Val His Cys Ile Leu
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Tyr His Gly Lys Asp Ile Val Ala Lys Phe Lys Asp Arg Lys Asn Gly
450 455 460

Gly Thr Asp Ile His Met Arg Ile Tyr Ser Lys Asn Tyr Lys Asp Cys
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Pro Asp Trp Trp Tyr Leu Leu Leu Gln Ile Val Met Ile Gly Leu Gly
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Phe Val Ala Val Cys Cys Phe Asp Thr Lys Phe Pro Ala Trp Ala Phe
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515 520 525

Leu Glu Ala Met Thr Asn Gln His Val Gly Leu Asn Ile Ile Thr Glu
530 535 540

Leu Ile Cys Gly Tyr Met Leu Pro Leu Arg Pro Met Ala Asn Leu Leu

545 550 555 560

Phe Lys Leu Tyr Gly Phe Ile Val Met Arg Gln Gly Leu Asn Leu Ser
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Arg Asp Leu Lys Leu Ala Met Tyr Met Lys Val Ser Pro Arg Leu Ile
580 585 590

Phe Ala Val Gln Ile Tyr Ala Thr Ile Ile Ser Gly Met Val Asn Val
595 600 605

Gly Val Gln Glu Trp Met Met His Asn Ile Asp Gly Leu Cys Thr Thr
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Asp Gln Pro Asn Gly Phe Thr Cys Ala Asn Gly Arg Thr Val Phe Asn
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Ile Tyr Asn Pro Leu Met Trp Phe Phe Leu Ile Gly Leu Leu Phe Pro
660 665 670

Leu Ala Val Tyr Ala Val Gln Trp Lys Phe Pro Lys Phe Lys Phe Ala
675 680 685

Lys His Ile His Thr Pro Val Phe Phe Thr Gly Pro Gly Asn Ile Pro
690 695 700

Pro Ser Thr Pro Tyr Asn Tyr Ser Leu Phe Phe Ala Met Ser Phe Cys
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725 730 735

Phe Val Met Gly Ala Gly Val Glu Ala Gly Val Ala Ile Ser Val Val
740 745 750

Ile Ile Phe Leu Cys Val Gln Tyr Pro Gly Gly Lys Leu Ser Trp Trp
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 65                  70                  75                  80

Leu Thr Val Ser Ser Val Val Ala Gln Ile Ile Thr Leu Pro Leu Gly
                 85                  90                  95

Lys Leu Met Ala Thr Thr Leu Pro Thr Thr Lys Leu Arg Leu Pro Gly
            100                 105                 110

Thr Asn Trp Ser Cys Ser Leu Asn Pro Gly Pro Phe Asn Met Lys Glu
        115                 120                 125

His Val Leu Ile Thr Ile Phe Ala Asn Thr Gly Ala Gly Gly Ala Tyr
    130                 135                 140

Ala Thr Ser Ile Leu Thr Ile Val Lys Ala Phe Tyr His Arg Asn Leu
145                 150                 155                 160

Asn Pro Ala Ala Ala Met Leu Leu Val Gln Thr Thr Gln Leu Leu Gly
                165                 170                 175

Tyr Gly Trp Ala Gly Met Phe Arg Lys Tyr Leu Val Asp Ser Pro Tyr
            180                 185                 190

Met Trp Trp Pro Ala Asn Leu Val Gln Val Ser Leu Phe Arg Ala Leu
        195                 200                 205

His Glu Lys Glu Glu Lys Arg Glu Gly Lys Gln Thr Lys Leu Arg Phe
    210                 215                 220

Phe Leu Ile Val Phe Phe Leu Ser Phe Thr Tyr Tyr Ile Val Pro Gly
225                 230                 235                 240

Tyr Leu Phe Pro Ser Ile Ser Tyr Leu Ser Phe Val Cys Trp Ile Trp
                245                 250                 255

Thr Arg Ser Val Thr Ala Gln Gln Ile Gly Ser Gly Leu His Gly Leu
            260                 265                 270

Gly Ile Gly Ser Phe Gly Leu Asp Trp Ser Thr Val Ala Gly Phe Leu
        275                 280                 285

Gly Ser Pro Leu Ala Val Pro Phe Phe Ala Ile Ala Asn Ser Phe Gly
    290                 295                 300

Gly Phe Ile Ile Phe Phe Tyr Ile Ile Leu Pro Ile Phe Tyr Trp Ser
305                 310                 315                 320

Asn Ala Tyr Glu Ala Lys Lys Phe Pro Phe Tyr Thr Ser His Pro Phe
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Asp His Thr Gly Gln Arg Tyr Asn Thr Thr Arg Ile Leu Asn Gln Lys
            340                 345                 350

Thr Phe Asn Ile Asp Leu Pro Ala Tyr Glu Ser Tyr Ser Lys Leu Tyr
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Thr Ala Thr Ile Ser His Val Ala Leu Phe Asp Gly Lys Phe Ile Trp
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Glu Leu Trp Lys Lys Ala Thr Leu Thr Thr Lys Asp Lys Phe Gly Asp
405 410 415

Val His Thr Arg Leu Met Lys Lys Asn Tyr Lys Glu Val Pro Gln Trp
420 425 430

Trp Phe Val Ala Val Leu Ala Ala Ser Phe Val Leu Ala Leu Tyr Ala
435 440 445

Cys Glu Gly Phe Gly Lys Gln Leu Gln Leu Pro Trp Trp Gly Leu Leu
450 455 460

Leu Ala Cys Ala Ile Ala Phe Thr Phe Thr Leu Pro Ile Gly Val Ile
465 470 475 480

Leu Ala Thr Thr Asn Gln Arg Met Gly Leu Asn Val Ile Ser Glu Leu
485 490 495

Ile Ile Gly Phe Leu Tyr Pro Gly Lys Pro Leu Ala Asn Val Ala Phe
500 505 510

Lys Thr Tyr Gly Ser Val Ser Ile Ala Gln Ala Leu Tyr Phe Val Gly
515 520 525

Asp Phe Lys Leu Gly His Tyr Met Lys Ile Pro Pro Arg Ser Met Phe
530 535 540

Ile Val Gln Leu Val Ala Thr Ile Val Ala Ser Thr Val Ser Phe Gly
545 550 555 560

Thr Thr Trp Trp Leu Leu Ser Ser Val Glu Asn Ile Cys Asn Thr Asp
565 570 575

Met Leu Pro Lys Ser Ser Pro Trp Thr Cys Pro Gly Asp Val Val Phe
580 585 590

Tyr Asn Ala Ser Ile Ile Trp Gly Ile Ile Gly Pro Gly Arg Met Phe
595 600 605

Thr Ser Lys Gly Ile Tyr Pro Gly Met Asn Trp Phe Phe Leu Ile Gly
610 615 620

Phe Leu Ala Pro Val Pro Val Trp Phe Phe Ala Arg Lys Phe Pro Glu
625 630 635 640

Lys Lys Trp Ile His Gln Ile His Ile Pro Leu Ile Phe Ser Gly Ala
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Asn Val Met Pro Met Ala Lys Ala Val His Tyr Trp Ser Trp Phe Ala
660 665 670

Val Gly Ile Val Phe Asn Tyr Tyr Ile Phe Arg Arg Tyr Lys Gly Trp
675 680 685

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Trp Ala Arg His Asn Tyr Ile Leu Ser Ala Ala Leu Asp Ala Gly Thr
    690                 695                 700

Ala Val Met Gly Val Leu Ile Tyr Phe Ala Leu Gln Asn Asn Asn Ile
705                 710                 715                 720

Ser Leu Pro Asp Trp Trp Gly Asn Glu Asn Thr Asp His Cys Pro Leu
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         35                  40                  45

Pro Ser Gln Pro Ser Leu Met Gln Ile Ala Gly Leu Pro Ile Gly Lys
     50                  55                  60

Phe Met Ala Arg Thr Leu Pro Thr Thr Ser His Asn Leu Leu Gly Trp
 65                  70                  75                  80

Ser Phe Ser Leu Asn Pro Gly Pro Phe Asn Ile Lys Glu His Val Ile
                85                  90                  95

Ile Thr Ile Phe Ala Asn Cys Gly Val Ala Tyr Gly Gly Gly Asp Ala
            100                 105                 110

Tyr Ser Ile Gly Ala Ile Thr Val Met Lys Ala Tyr Tyr Lys Gln Ser
        115                 120                 125

Leu Ser Phe Ile Cys Gly Leu Phe Ile Val Leu Thr Thr Gln Ile Leu
    130                 135                 140

Gly Tyr Gly Trp Ala Gly Ile Leu Arg Arg Tyr Leu Val Asp Pro Val
145                 150                 155                 160

Asp Met Trp Trp Pro Ser Asn Leu Ala Gln Val Ser Leu Phe Arg Ala
                165                 170                 175

Leu His Glu Lys Glu Asn Lys Ser Lys Gly Leu Thr Arg Met Lys Phe
            180                 185                 190

Phe Leu Val Ala Leu Gly Ala Ser Phe Ile Tyr Tyr Ala Leu Pro Gly
        195                 200                 205
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Tyr Leu Phe Pro Ile Leu Thr Phe Ser Ser Trp Val Cys Trp Ala Trp
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Pro Asn Ser Ile Thr Ala Gln Gln Val Gly Ser Gly Tyr His Gly Leu
225 230 235 240

Gly Val Gly Ala Phe Thr Leu Asp Trp Ala Gly Ile Ser Ala Tyr His
245 250 255

Gly Ser Pro Leu Val Ala Pro Trp Ser Ser Ile Leu Asn Val Gly Val
260 265 270

Gly Phe Ile Met Phe Ile Tyr Ile Ile Val Pro Val Cys Tyr Trp Lys
275 280 285

Phe Asn Thr Phe Asp Ala Arg Lys Phe Pro Ile Ser Ser Asn Gln Leu
290 295 300

Phe Thr Thr Ser Gly Gln Lys Tyr Asp Thr Thr Lys Ile Leu Thr Pro
305 310 315 320

Gln Phe Asp Leu Asp Ile Gly Ala Tyr Asn Asn Tyr Gly Lys Leu Tyr
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Leu Ser Pro Leu Phe Ala Leu Ser Ile Gly Ser Gly Phe Ala Arg Phe
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Lys Gln Thr Trp Ser Ala Val Asn Thr Thr Lys Leu Asp Ile His Gly
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Lys Leu Met Gln Ser Tyr Lys Lys Val Pro Glu Trp Trp Phe Tyr Ile
385 390 395 400

Leu Leu Ala Gly Ser Val Ala Met Ser Leu Leu Met Ser Phe Val Trp
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Lys Glu Ser Val Gln Leu Pro Trp Trp Gly Met Leu Phe Ala Phe Ala
420 425 430

Leu Ala Phe Ile Val Thr Leu Pro Ile Gly Val Ile Gln Ala Thr Thr
435 440 445

Asn Gln Gln Pro Gly Tyr Asp Ile Ile Gly Gln Phe Ile Ile Gly Tyr
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Ile Leu Pro Gly Lys Pro Ile Ala Asn Leu Ile Phe Lys Ile Tyr Gly
465 470 475 480

Arg Ile Ser Thr Val His Ala Leu Ser Phe Leu Ala Asp Leu Lys Leu
485 490 495

Gly His Tyr Met Lys Ile Pro Pro Pro Cys Met Tyr Thr Ala Gln Leu
500 505 510

Val Gly Thr Val Val Ala Gly Val Val Asn Leu Gly Val Ala Trp Trp
515 520 525

Met Leu Glu Ser Ile Gln Asp Ile Cys Asp Ile Glu Gly Asp His Pro

530 535 540

Asn Ser Pro Trp Thr Cys Pro Lys Tyr Arg Val Thr Phe Asp Ala Ser
545 550 555 560

Val Ile Trp Gly Leu Ile Gly Pro Arg Arg Leu Phe Gly Pro Gly Gly
565 570 575

Met Tyr Arg Asn Leu Val Gly Phe Phe Leu Ile Gly Ala Val Leu Pro
580 585 590

Val Pro Arg Val Gly Ala Glu Gln Asp Leu Pro Lys Gln Glu Val Asp
595 600 605

Pro Ser His Gln His Ser Ser Tyr Leu Leu Arg Leu Cys Arg Asp Ala
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Ser Ser His Ser Asn Gln His Cys Gln Leu Val Gly His Arg Asn His
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Gln Leu Arg Thr Leu Cys Ser Ala Arg Cys Arg Asp Arg Val His Gly
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Glu Glu Glu Glu Glu Asn Ser Pro Ile Arg Gln Val Ala Leu Thr Val
50 55 60

Pro Thr Thr Asp Asp Pro Ser Leu Pro Val Leu Thr Phe Arg Met Trp
65 70 75 80

Val Leu Gly Thr Leu Ser Cys Ile Leu Leu Ser Phe Leu Asn Gln Phe
85 90 95

Phe Trp Tyr Arg Thr Glu Pro Leu Thr Ile Ser Ala Ile Ser Ala Gln
100 105 110

Ile Ala Val Val Pro Leu Gly Arg Leu Met Ala Ala Lys Ile Thr Asp

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Arg Val Phe Phe Gln Gly Ser Lys Trp Gln Phe Thr Leu Asn Pro Gly
    130                 135                 140

Pro Phe Asn Val Lys Glu His Val Leu Ile Thr Ile Phe Ala Asn Ala
145                 150                 155                 160

Gly Ala Gly Ser Val Tyr Ala Ile His Val Val Thr Val Val Lys Ala
                165                 170                 175

Phe Tyr Met Lys Asn Ile Thr Phe Phe Val Ser Phe Ile Val Ile Val
            180                 185                 190

Thr Thr Gln Val Leu Gly Phe Gly Trp Ala Gly Ile Phe Arg Lys Tyr
        195                 200                 205

Leu Val Glu Pro Ala Ala Met Trp Trp Pro Ala Asn Leu Val Gln Val
    210                 215                 220

Ser Leu Phe Arg Ala Leu His Glu Lys Glu Glu Arg Thr Lys Gly Gly
225                 230                 235                 240

Leu Thr Arg Thr Gln Phe Phe Val Ile Ala Phe Val Cys Ser Phe Ala
                245                 250                 255

Tyr Tyr Val Phe Pro Gly Tyr Leu Phe Gln Ile Met Thr Ser Leu Ser
            260                 265                 270

Trp Val Cys Trp Phe Phe Pro Ser Ser Val Met Ala Gln Gln Ile Gly
        275                 280                 285

Ser Gly Leu His Gly Leu Gly Val Gly Ala Ile Gly Leu Asp Trp Ser
    290                 295                 300

Thr Ile Ser Ser Tyr Leu Gly Ser Pro Leu Ala Ser Pro Trp Phe Ala
305                 310                 315                 320

Thr Ala Asn Val Gly Val Gly Phe Val Leu Val Ile Tyr Val Leu Val
                325                 330                 335

Pro Ile Cys Tyr Trp Leu Asp Val Tyr Lys Ala Lys Thr Phe Pro Ile
            340                 345                 350

Phe Ser Ser Ser Leu Phe Ser Ser Gln Gly Ser Lys Tyr Asn Ile Thr
        355                 360                 365

Ser Ile Ile Asp Ser Asn Phe His Leu Asp Leu Pro Ala Tyr Glu Arg
    370                 375                 380

Gln Gly Pro Leu Tyr Leu Cys Thr Phe Phe Ala Ile Ser Tyr Gly Val
385                 390                 395                 400

Gly Phe Ala Ala Leu Ser Ala Thr Ile Met His Val Ala Leu Phe His
                405                 410                 415

Gly Arg Glu Ile Trp Glu Gln Ser Lys Glu Ser Phe Lys Glu Lys Lys
            420                 425                 430

Leu Asp Val His Ala Arg Leu Met Gln Arg Tyr Lys Gln Val Pro Glu
        435                 440                 445
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465                 470                 475                 480

Leu Leu Ala Cys Thr Val Ala Ile Ile Phe Thr Leu Pro Ile Gly Ile
                485                 490                 495

Ile Thr Ala Ile Thr Asn Gln Ala Pro Gly Leu Asn Ile Ile Thr Glu
            500                 505                 510

Tyr Ile Ile Gly Tyr Ile Tyr Pro Gly Tyr Pro Val Ala Asn Met Cys
        515                 520                 525

Phe Lys Val Tyr Gly Tyr Ile Ser Met Gln Gln Ala Ile Thr Phe Leu
    530                 535                 540

Gln Asp Phe Lys Leu Gly His Tyr Met Lys Ile Pro Pro Arg Thr Met
545                 550                 555                 560

Phe Met Ala Gln Ile Val Gly Thr Leu Ile Ser Cys Phe Val Tyr Leu
                565                 570                 575

Thr Thr Ala Trp Trp Leu Met Glu Thr Ile Pro Asn Ile Cys Asp Ser
            580                 585                 590

Val Thr Asn Ser Val Trp Thr Cys Pro Ser Asp Lys Val Phe Tyr Asp
        595                 600                 605

Ala Ser Val Ile Trp Gly Leu Ile Gly Pro Arg Arg Ile Phe Gly Asp
    610                 615                 620

Leu Gly Leu Tyr Lys Ser Val Asn Trp Phe Phe Leu Val Gly Ala Ile
625                 630                 635                 640

Ala Pro Ile Leu Val Trp Leu Ala Ser Arg Met Phe Pro Arg Gln Glu
                645                 650                 655

Trp Ile Lys Leu Ile Asn Met Pro Val Leu Ile Ser Ala Thr Ser Ser
            660                 665                 670

Met Pro Pro Ala Thr Ala Val Asn Tyr Thr Thr Trp Val Leu Ala Gly
        675                 680                 685

Phe Leu Ser Gly Phe Val Val Phe Arg Tyr Arg Pro Asn Leu Trp Gln
    690                 695                 700

Arg Tyr Asn Tyr Val Leu Ser Gly Ala Leu Asp Ala Gly Leu Ala Phe
705                 710                 715                 720

Met Gly Val Leu Leu Tyr Met Cys Leu Gly Leu Glu Asn Val Ser Leu
                725                 730                 735

Asp Trp Trp Gly Asn Glu Leu Asp Gly Cys Pro Leu Ala Ser Cys Pro
            740                 745                 750

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             20                  25                  30

Asp Ser Thr Leu Pro Val Leu Thr Phe Arg Met Trp Val Leu Gly Ile
         35                  40                  45

Gly Ala Cys Ile Val Leu Ser Phe Ile Asn Gln Phe Phe Trp Tyr Arg
     50                  55                  60

Thr Met Pro Leu Ser Ile Thr Gly Ile Ser Ala Gln Ile Ala Val Val
 65                  70                  75                  80

Pro Leu Gly His Leu Met Ala Arg Val Leu Pro Thr Lys Arg Phe Leu
                85                  90                  95

Glu Gly Thr Arg Phe Gln Phe Thr Leu Asn Pro Gly Ala Phe Asn Val
            100                 105                 110

Lys Glu His Val Leu Ile Thr Ile Phe Ala Asn Ser Gly Ala Gly Ser
        115                 120                 125

Val Tyr Ala Thr His Ile Leu Ser Ala Ile Lys Leu Tyr Tyr Lys Arg
    130                 135                 140

Ser Leu Pro Phe Leu Pro Ala Phe Leu Val Met Ile Thr Thr Gln Ile
145                 150                 155                 160

Leu Gly Phe Gly Trp Ala Gly Leu Phe Arg Lys His Leu Val Glu Pro
                165                 170                 175

Gly Glu Met Trp Trp Pro Ser Asn Leu Val Gln Val Ser Leu Phe Gly
            180                 185                 190

Ala Leu His Glu Lys Glu Lys Lys Ser Arg Gly Gly Met Ser Arg Thr
        195                 200                 205

Gln Phe Phe Leu Ile Val Leu Val Ala Ser Phe Ala Tyr Tyr Ile Phe
    210                 215                 220

Pro Gly Tyr Leu Phe Thr Met Leu Thr Ser Ile Ser Trp Val Cys Trp
225                 230                 235                 240

Leu Asn Pro Lys Ser Ile Leu Val Asn Gln Leu Gly Ser Gly Glu His
                245                 250                 255

Gly Leu Gly Ile Gly Ser Ile Gly Phe Asp Trp Val Thr Ile Ser Ala
            260                 265                 270

Tyr Leu Gly Ser Pro Leu Ala Ser Pro Leu Phe Ala Ser Val Asn Val
        275                 280                 285
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Ala Ile Gly Phe Val Leu Val Met Tyr Ile Val Thr Pro Val Cys Tyr
    290                 295                 300

Trp Leu Asn Ile Tyr Asp Ala Lys Thr Phe Pro Ile Phe Ser Ser Gln
305                 310                 315                 320

Leu Phe Met Gly Asn Gly Ser Arg Tyr Asp Val Leu Ser Ile Ile Asp
                325                 330                 335

Ser Lys Phe His Leu Asp Arg Val Val Tyr Ser Arg Thr Gly Ser Ile
            340                 345                 350

Asn Met Ser Thr Phe Phe Ala Val Thr Tyr Gly Leu Gly Phe Ala Thr
        355                 360                 365

Leu Ser Ala Thr Ile Val His Val Leu Val Phe Asn Gly Ser Asp Leu
    370                 375                 380

Trp Lys Gln Thr Arg Gly Ala Phe Gln Lys Asn Lys Lys Met Asp Ile
385                 390                 395                 400

His Thr Arg Ile Met Lys Lys Asn Tyr Arg Glu Val Pro Leu Trp Trp
                405                 410                 415

Phe Leu Val Ile Leu Leu Leu Asn Ile Ala Leu Ile Met Phe Ile Ser
            420                 425                 430

Val His Tyr Asn Ala Thr Val Gln Leu Pro Trp Trp Gly Val Leu Leu
        435                 440                 445

Ala Cys Ala Ile Ala Ile Ser Phe Thr Pro Leu Ile Gly Val Ile Ala
    450                 455                 460

Ala Thr Thr Asn Gln Ala Pro Gly Leu Asn Ile Ile Thr Glu Tyr Val
465                 470                 475                 480

Ile Gly Tyr Ile Tyr Pro Glu Arg Pro Val Ala Asn Met Cys Phe Lys
                485                 490                 495

Val Tyr Gly Tyr Ile Ser Met Thr Gln Ala Leu Thr Phe Ile Ser Asp
            500                 505                 510

Phe Lys Leu Gly His Tyr Met Lys Ile Pro Pro Arg Ser Met Phe Met
        515                 520                 525

Ala Gln Val Ala Gly Thr Leu Val Ala Val Val Val Tyr Thr Gly Thr
    530                 535                 540

Ala Trp Trp Leu Met Glu Glu Ile Pro His Leu Cys Asp Thr Ser Leu
545                 550                 555                 560

Leu Pro Ser Asp Ser Gln Trp Thr Cys Pro Met Asp Arg Val Phe Phe
                565                 570                 575

Asp Ala Ser Val Ile Trp Gly Leu Val Gly Pro Arg Arg Val Phe Gly
            580                 585                 590

Asp Leu Gly Glu Tyr Ser Asn Val Asn Trp Phe Phe Leu Val Gly Ala
        595                 600                 605

Ile Ala Pro Leu Leu Val Trp Leu Ala Thr Lys Met Phe Pro Ala Gln
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610 615 620

Thr Trp Ile Ala Lys Ile His Ile Pro Val Leu Val Gly Ala Thr Ala
625 630 635 640

Met Met Pro Pro Ala Thr Ala Val Asn Phe Thr Ser Trp Leu Ile Val
645 650 655

Ala Phe Ile Phe Gly His Phe Ile Phe Lys Tyr Arg Arg Val Trp Trp
660 665 670

Thr Lys Tyr Asn Tyr Val Leu Ser Gly Gly Leu Asp Ala Gly Ser Ala
675 680 685

Phe Met Thr Ile Leu Leu Phe Leu Ala Leu Gly Arg Lys Gly Ile Glu
690 695 700

Val Gln Trp Trp Gly Asn Ser Gly Asp Arg Asp Thr Cys Pro Leu Ala
705 710 715 720

Ser Cys Pro Thr Ala Lys Gly Val Val Val Lys Gly Cys Pro Val Phe
725 730 735

<210> 7
<211> 722
<212> PRT
<213> Arabidopsis thaliana

<400> 7
Met Ala Ala Ile Glu Leu His Lys Pro Glu Ile Asn Ala Asp Asp Asp
1 5 10 15

Asp Asp Glu Ser Pro Val Glu Gln Val Arg Leu Thr Val Ser Asn His
20 25 30

Asp Asp Pro Ser Leu Pro Val Trp Thr Phe Arg Met Trp Phe Leu Gly
35 40 45

Leu Leu Ser Cys Ile Leu Leu Ser Phe Leu Asn Thr Phe Phe Gly Tyr
50 55 60

Arg Thr Gln Pro Leu Met Ile Thr Met Ile Ser Val Gln Val Val Thr
65 70 75 80

Leu Pro Leu Gly Lys Leu Met Ala Arg Val Leu Pro Glu Thr Lys Tyr
85 90 95

Lys Ile Gly Ser Trp Glu Phe Ser Phe Asn Pro Gly Pro Phe Asn Val
100 105 110

Lys Glu His Val Leu Ile Ser Met Phe Ala Asn Ala Gly Ala Gly Phe
115 120 125

Gly Ser Gly Thr Ala Tyr Ala Val Gly Ile Val Asp Ile Ile Met Ala
130 135 140

Phe Tyr Lys Arg Lys Ile Ser Phe Leu Ala Ser Trp Ile Leu Val Ile
145 150 155 160

Thr Thr Gln Asp Asn Ala Arg Met Ser Arg Gly Lys Phe Phe Val Ile

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                165                 170                 175

Ala Phe Val Cys Ser Phe Ala Trp Tyr Ile Phe Pro Ala Tyr Leu Phe
            180                 185                 190

Leu Thr Leu Ser Ser Ile Ser Trp Val Cys Trp Ala Phe Pro Lys Ser
        195                 200                 205

Ile Thr Ala Gln Gln Leu Gly Ser Gly Met Ser Gly Leu Gly Ile Gly
    210                 215                 220

Ala Phe Ala Leu Asp Trp Ser Val Ile Ala Ser Tyr Leu Gly Ser Pro
225                 230                 235                 240

Leu Val Thr Pro Phe Phe Ala Ile Val Asn Val Leu Val Gly Tyr Val
                245                 250                 255

Leu Val Met Tyr Met Val Ile Pro Ile Ser Tyr Trp Gly Met Asn Val
            260                 265                 270

Tyr Glu Ala Asn Lys Phe Pro Ile Phe Ser Ser Asp Leu Phe Asp Lys
        275                 280                 285

Gln Gly Gln Leu Tyr Asn Ile Ser Thr Ile Val Asn Asn Lys Phe Glu
    290                 295                 300

Leu Asp Met Glu Asn Tyr Gln Gln Gln Gly Arg Val Tyr Leu Ser Thr
305                 310                 315                 320

Phe Phe Ala Ile Ser Tyr Gly Ile Gly Phe Ala Ala Ile Val Ser Thr
                325                 330                 335

Leu Thr His Val Ala Leu Phe Asn Gly Lys Gly Ile Trp Gln Gln Val
            340                 345                 350

Arg Ala Ser Thr Lys Ala Lys Met Asp Ile His Thr Arg Leu Met Lys
        355                 360                 365

Lys Tyr Lys Asp Ile Pro Gly Trp Trp Phe Tyr Ser Leu Leu Ala Ile
    370                 375                 380

Ser Leu Val Leu Ser Leu Val Leu Cys Ile Phe Met Lys Asp Glu Ile
385                 390                 395                 400

Gln Met Pro Trp Trp Gly Leu Leu Leu Ala Ser Phe Met Ala Leu Thr
                405                 410                 415

Phe Thr Val Pro Val Ser Ile Ile Thr Ala Thr Thr Asn Gln Thr Pro
            420                 425                 430

Gly Leu Asn Ile Ile Thr Glu Tyr Leu Met Gly Val Leu Leu Pro Gly
        435                 440                 445

Arg Pro Ile Ala Asn Val Cys Phe Lys Thr Tyr Gly Tyr Ile Ser Met
    450                 455                 460

Ser Gln Ala Ile Ser Phe Leu Asn Asp Phe Lys Leu Gly His Tyr Met
465                 470                 475                 480

Lys Ile Pro Pro Arg Ser Met Phe Leu Val Gln Phe Ile Gly Thr Val
                485                 490                 495
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Ile Ala Gly Thr Val Asn Ile Ser Val Ala Trp Tyr Leu Leu Thr Ser
            500                 505                 510

Val Glu Asn Ile Cys Gln Lys Glu Leu Leu Pro Pro Asn Ser Pro Trp
        515                 520                 525

Thr Cys Pro Ser Asp Arg Val Phe Phe Asp Ala Ser Val Ile Trp Gly
    530                 535                 540

Leu Val Gly Pro Lys Arg Ile Phe Gly Arg Leu Gly Asn Tyr Pro Ala
545                 550                 555                 560

Leu Asn Trp Phe Phe Leu Gly Gly Leu Ile Gly Pro Val Leu Val Trp
                565                 570                 575

Leu Leu Gln Lys Ala Phe Pro Thr Lys Thr Trp Ile Ser Gln Ile Asn
            580                 585                 590

Leu Pro Val Leu Leu Gly Ala Thr Ala Ala Met Pro Pro Ala Thr Ser
        595                 600                 605

Val Asn Phe Asn Cys Trp Ile Ile Val Gly Val Ile Phe Asn Tyr Phe
    610                 615                 620

Val Phe Lys Tyr Cys Lys Lys Trp Trp Gln Arg Tyr Asn Tyr Val Leu
625                 630                 635                 640

Ser Ala Ala Leu Asp Ala Gly Leu Ala Phe Met Gly Val Leu Leu Tyr
                645                 650                 655

Phe Ser Leu Thr Met Asn Gly Ile Ser Ile Asn His Trp Trp Gly Ala
            660                 665                 670

Lys Gly Glu Asn Cys Pro Leu Ala Ser Cys Pro Thr Ala Pro Gly Val
        675                 680                 685

Leu Val Asp Asp Phe Thr Val Phe Phe Phe Phe Leu Lys Ile Phe Val
    690                 695                 700

Pro Phe Val Asn Lys Asn Arg Leu Asn Asp Phe Leu Ser Met Tyr Leu
705                 710                 715                 720

Leu Tyr
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<210> 8
<211> 783
<212> PRT
<213> Candida albicans

<400> 8

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Met Asp Lys Ile Arg Ala Val Ile Ser Gly Gly Glu Lys Pro Pro Val
  1               5                  10                  15

Asp Thr Asp Asn Asp His Asn Thr Asp Phe Glu Ala Asp Arg Lys Met
             20                  25                  30

Pro Asp Leu Asp Ile Val Val Ser Lys Ser Gln Glu Phe Asp Pro Val
         35                  40                  45
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Thr Ser His Leu Val Asn Asp Ile Met Glu Asp Glu Tyr Ala Ala Val
     50                  55                  60

His Val Glu Asp Asp Ser Pro Tyr Pro Glu Val Arg Ala Ala Val Pro
 65                  70                  75                  80

Ser Thr Asp Asp Pro Thr Leu Pro Gln Asn Thr Ile Arg Ala Trp Val
                 85                  90                  95

Ile Gly Leu Ile Leu Thr Thr Val Gly Cys Gly Met Asn Met Leu Phe
            100                 105                 110

Ser Phe His Ser Pro Ser Phe Ala Ile Thr Thr Phe Val Thr Ser Ile
        115                 120                 125

Leu Ala Trp Pro Ile Gly Asn Phe Trp Ala Trp Ile Val Pro Asp Trp
    130                 135                 140

Lys Ile Phe Gly Ala Ser Leu Asn Pro Gly Pro Phe Asn Val Lys Glu
145                 150                 155                 160

His Thr Ile Ile Thr Ile Met Ala Asn Val Ser Phe Gly Thr Gly Ala
                165                 170                 175

Ala Thr Ala Thr Asp Ile Leu Leu Ala Gln Asn Met Phe Tyr Lys Ser
            180                 185                 190

Asn Phe Gly Trp Gly Tyr Asn Leu Leu Leu Ile Trp Ser Thr Gln Cys
        195                 200                 205

Ile Gly Phe Ala Phe Gly Gly Val Met Arg Arg Phe Val Val Asp Ser
    210                 215                 220

Pro Gly Ala Ile Trp Pro Ser Asn Leu Val Thr Ala Thr Phe Leu Thr
225                 230                 235                 240

Asn Met His Ile Asn Glu Asn His Thr Ala Asn Gly Trp Lys Ile Ser
                245                 250                 255

Arg Leu Ala Phe Phe Val Ile Val Phe Val Ala Ser Phe Val Trp Tyr
            260                 265                 270

Trp Phe Pro Gly Tyr Ile Phe Gln Ala Leu Ser Tyr Phe Ser Trp Ile
        275                 280                 285

Thr Trp Ile Lys Pro Asn Asn Val Ile Ile Asn Gln Val Phe Gly Ser
    290                 295                 300

Ser Ser Gly Leu Gly Met Ile Pro Asn Asn Ile Ala Leu Asp Trp Asn
305                 310                 315                 320

Gln Ile Ala Gly Tyr Ile Gly Ser Pro Leu Ile Pro Pro Ala Ser Val
                325                 330                 335

Ile Ala Thr Ile Phe Gly Ser Ile Val Leu Ile Phe Trp Ile Val Val
            340                 345                 350

Pro Ala Ile His Tyr Ser Asn Thr Trp Tyr Ser Gln Tyr Leu Pro Ile
        355                 360                 365
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Ser Ser Thr Gly Ser Phe Asp Arg Phe Gln Gln Thr Tyr Asn Val Ser
370 375 380

Lys Ile Ile Asp His Lys Thr Leu Ser Phe Asn Glu Ala Glu Tyr Lys
385 390 395 400

Lys Tyr Ser Pro Leu Phe Leu Ser Thr Thr Phe Ala Ile Ser Tyr Gly
405 410 415

Leu Ser Phe Ala Ser Ile Leu Ala Thr Ile Thr His Thr Ile Cys Phe
420 425 430

His Gly Arg Asp Leu Ile Ala Ser Leu Lys Ala Lys Glu Lys Pro Asp
435 440 445

Val His Asn Arg Leu Met Lys Ala Tyr Lys Pro Val Pro Glu Trp Trp
450 455 460

Tyr Leu Val Val Phe Leu Val Phe Phe Gly Met Ser Ile Ala Thr Val
465 470 475 480

Arg Ala Trp Pro Thr Glu Met Pro Val Trp Gly Leu Val Phe Ala Leu
485 490 495

Ile Ile Ala Ile Ile Phe Leu Leu Pro Val Ala Ile Ile Tyr Ala Lys
500 505 510

Thr Asn Ile Ala Val Gly Leu Asn Val Val Thr Glu Phe Ile Val Gly
515 520 525

Tyr Val Leu Gly Gly Arg Pro Leu Cys Met Met Leu Phe Lys Thr Phe
530 535 540

Gly Tyr Ile Thr Asn Asn Gln Ala Val Thr Phe Val Gln Asp Met Lys
545 550 555 560

Leu Gly His Tyr Met Lys Ile Asp Pro Arg Thr Leu Phe Trp Ala Gln
565 570 575

Phe Ala Ala Thr Ile Trp Gly Ser Leu Val Gln Ile Ala Val Leu Glu
580 585 590

Trp Ala Tyr Gly Ala Ile Asp Asn Leu Cys Ala Ala Asp Gln Lys Asn
595 600 605

His Tyr Thr Cys Pro Asn Gly Lys Val Phe Phe Asn Ala Ser Ile Ile
610 615 620

Trp Gly Val Ile Gly Pro Gln Arg Gln Phe Ser His Gly Gln Ile Tyr
625 630 635 640

Tyr Gly Leu Leu Phe Phe Phe Ile Ile Gly Ala Val Thr Pro Val Ile
645 650 655

Asn Trp Leu Ile Leu Lys Lys Trp Pro Asn Ser Pro Val Lys Tyr Leu
660 665 670

His Trp Pro Val Phe Phe Ser Gly Thr Gly Tyr Ile Pro Pro Ala Thr
675 680 685

Pro Tyr Asn Tyr Thr Ser Tyr Cys Ala Val Gly Leu Phe Phe Gly Trp

690 695 700

Trp Ile Lys Lys Lys Trp Phe His Trp Trp Ser Lys Tyr Asn Tyr Ser
705 710 715 720

Leu Ser Ala Gly Leu Asp Ile Gly Leu Ala Trp Cys Ser Leu Ile Ile
725 730 735

Phe Leu Cys Leu Ser Leu Thr Asn Thr Asp Phe Pro Ser Trp Trp Gly
740 745 750

Asn Asp Val Ile Asn Thr Thr Leu Asp Thr Gln Val Val Thr Asn Ile
755 760 765

Arg His Ile Leu Lys Glu Gly Glu Ala Phe Gly Pro Ser Ser Trp
770 775 780

<210> 9
<211> 877
<212> PRT
<213> Saccharomyces cerevisiae

<400> 9
Met Ser Glu Thr Val Lys Asp Lys Val Ile Ile Asp Glu Lys Val Ser
1 5 10 15

Thr Lys Gly Thr Val Asp Tyr Ala Glu Gly Ala Glu Tyr Ser Glu Arg
20 25 30

Leu Ser Asn His Ser Ser Asp Phe Ser Gln Trp Tyr Thr Asp Glu Gln
35 40 45

Ile Leu His Phe Met Lys Lys Leu Gly Tyr Glu Asn Arg Thr Leu Tyr
50 55 60

Asp Ile Pro Glu Asp Val Ala Tyr Ile Leu Lys Lys Met Pro Glu Leu
65 70 75 80

Thr Leu Glu Asp Ser Phe Lys Ile Leu Lys Asp Ser Ile Ile Tyr Phe
85 90 95

Lys Asp Asp Glu Asn Ile Pro His Asp Gln Tyr Glu Glu Trp Lys Arg
100 105 110

Leu Val Asp Leu Glu Asp Leu Asp Ser Lys Glu Gly Ile Asp Glu Tyr
115 120 125

Asp Ser Phe Asp Ile Arg Ala Phe Ala Ser Ala Ile Lys Phe His Ser
130 135 140

Pro Tyr Gln Glu Val Arg Ala Val Val Asp Pro Glu Asp Asp Pro Thr
145 150 155 160

Ile Pro Val Glu Thr Phe Arg Ala Tyr Phe Leu Ala Ile Ile Trp Ser
165 170 175

Val Ile Gly Ser Gly Phe Asn Glu Phe Phe Ser His Arg Val Val Ser
180 185 190

Ile Ser Leu Asn Thr Pro Ile Ile Gln Met Phe Leu Tyr Ile Cys Gly

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        195                 200                 205

Lys Ala Trp Ala Lys Thr Ile Pro Cys Trp Thr Ile Thr Ile Arg Gly
    210                 215                 220

Arg Lys Tyr Gly Ile Asn Ile Asp Lys Pro Trp Thr Gln Lys Glu Gln
225                 230                 235                 240

Met Phe Ser Thr Leu Leu Tyr Ala Ile Cys Gln Gly Ala Phe Tyr Thr
                245                 250                 255

His Tyr Asn Ile Leu Thr Gln Lys Leu Phe Tyr His Ser Ala Phe Ser
            260                 265                 270

Phe Gly Tyr Gln Phe Leu Leu Ser Leu Ser Val Gln Phe Ile Gly Phe
        275                 280                 285

Gly Phe Ala Gly Ile Leu Arg Lys Phe Val Val Tyr Pro Ala Arg Ala
    290                 295                 300

Leu Trp Pro Thr Val Met Pro Thr Ile Ala Ile Asn Lys Ala Leu Leu
305                 310                 315                 320

Gly Lys Glu Lys His Glu Ser Gly Met Ser Arg Tyr Lys Phe Phe Phe
                325                 330                 335

Leu Thr Phe Phe Ile Met Phe Ile Tyr Asn Trp Phe Pro Thr Tyr Ile
            340                 345                 350

Ile Asn Ile Leu Asn Thr Phe Asn Trp Met Thr Trp Ile Lys Pro Ser
        355                 360                 365

Asn Ile Asn Leu Ala Asn Ile Thr Gly Gly Val Thr Gly Leu Gly Ile
    370                 375                 380

Asn Pro Ile Ser Ser Phe Asp Trp Asn Val Ile Ser Phe Asn Ser Pro
385                 390                 395                 400

Leu Val Tyr Pro Phe Trp Ser Tyr Leu Thr Gln Tyr Leu Gly Cys Ile
                405                 410                 415

Leu Ala Ala Leu Ile Val Ile Ala Val Tyr Tyr Ser Asn Tyr Met Ser
            420                 425                 430

Cys Gln Tyr Leu Pro Ile Phe Thr Asn Ser Leu Tyr Thr Asn Thr Gly
        435                 440                 445

His Ser Phe Lys Val Thr Glu Val Leu Asp Ser Asp Asn Lys Leu Asp
    450                 455                 460

Val Lys Lys Tyr Gln Ser Tyr Ser Pro Pro Tyr Tyr Ser Ala Gly Asn
465                 470                 475                 480

Leu Val Ser Tyr Gly Ala Phe Ile Cys Ala Tyr Pro Leu Met Ile Thr
                485                 490                 495

Trp Ser Phe Ile Val His Ser Lys Leu Leu Phe Asn Ala Phe Lys Asp
            500                 505                 510

Trp Ala Leu Asn Leu Trp Ala Met Arg Lys Leu Lys Ser Trp Val Thr
        515                 520                 525
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Met Phe Lys Ser Asp Tyr Arg Ala Leu Asp Asp Tyr Asp Asp Pro His
530 535 540

Ser Asn Ala Met Lys Asn Tyr Lys Glu Val Pro Asp Trp Trp Tyr Phe
545 550 555 560

Ala Ile Leu Ile Gly Ser Leu Val Val Gly Ile Ala Val Val Glu His
565 570 575

Tyr Pro Thr Asn Thr Pro Val Trp Gly Leu Phe Val Cys Leu Gly Phe
580 585 590

Asn Phe Val Phe Leu Ile Pro Thr Thr Ile Leu Gln Ala Thr Thr Gly
595 600 605

Tyr Ser Phe Gly Leu Asn Leu Leu Ile Glu Met Val Met Gly Tyr Ala
610 615 620

Leu Pro Gly Asn Pro Ile Ala Ile Met Ile Leu Lys Ala Phe Gly Tyr
625 630 635 640

Asn Ile Asp Gly Gln Ala Asp Asn Tyr Val Ser Asn Leu Lys Ile Ala
645 650 655

His Tyr Cys Lys Ile Pro Pro Met Ala Leu Phe Arg Gly Gln Cys Val
660 665 670

Ile Val Phe Ile Gln Ile Phe Val Asn Leu Gly Val Leu Asn Trp Gln
675 680 685

Ile Ser Asn Ile Lys Asp Phe Cys Thr Pro His Gln Asn Ala Lys Phe
690 695 700

Thr Cys Pro Asp Ala Val Thr Tyr Tyr Asn Ala Ser Val Val Trp Gly
705 710 715 720

Ala Ile Gly Pro Lys Arg Ile Phe Asn Tyr Ile Tyr Pro Ile Phe Lys
725 730 735

Trp Cys Trp Leu Ile Gly Ala Cys Ile Gly Ile Phe Phe Gly Val Trp
740 745 750

Lys Arg Trp Gly Lys Phe Tyr Pro Arg Tyr Phe Asp Pro Met Leu Phe
755 760 765

Val Gly Gly Met Leu Asn Met Ser Pro Pro Tyr Asn Leu Met Tyr Tyr
770 775 780

Thr Ser Gly Met Ile Val Ser Tyr Ile Ser Gln Tyr Tyr Met Lys Arg
785 790 795 800

His His Leu Asn Leu Trp Glu Lys Tyr Asn Tyr Val Leu Ser Ala Gly
805 810 815

Phe Ser Thr Gly Leu Val Leu Ser Ala Ile Ile Ile Phe Phe Ala Val
820 825 830

Gln Tyr Lys Asp Thr Ala Phe Asn Trp Trp Gly Asn Thr Val Pro Tyr
835 840 845

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Ala Gly Ala Asp Gly Val Gly Tyr Pro Leu Lys Asn Ile Thr Asp Thr
    850                 855                 860

Ala Asn Gly Tyr Phe Gly Tyr Ala Pro Gly His Tyr Pro
865                 870                 875


<210> 10
<211> 851
<212> PRT
<213> Schizosaccharomyces pombe

<400> 10
Met Thr Ala Arg Asn Ser Ala Ser Ile Pro Thr Ser Ile Arg Lys Thr
  1               5                  10                  15

Ser Glu Asn Glu Val Ser Gly Asp Glu Thr Pro Ala Gly Val Gly Asn
             20                  25                  30

Leu Ser Thr Lys Thr Ala Ser Lys Thr Ser Leu Thr Phe Arg Gln Ser
         35                  40                  45

Ser Ser Asp Glu Ser Thr Ser Ser Tyr Ser Gly Asn His His Asn Ile
     50                  55                  60

Asn Ile Gln His His Pro Asn Arg Pro Phe Arg Thr Asn Ser Ser Ser
 65                  70                  75                  80

Phe Ser Pro Asn Asp Tyr Ser Ile Ser Glu Ser Pro Ser Lys Ser Lys
                 85                  90                  95

Lys Asp Gly Val His Val Ser Ala Val Gln Leu Asp Asn Glu Thr Asp
            100                 105                 110

Ser Glu Val Glu Ser Glu Val Glu Glu Leu Glu Arg Glu Leu Glu Ala
        115                 120                 125

Ile Glu Asp Ser Val Tyr Pro Glu Val Arg Ala Ala Val Asn Pro Thr
    130                 135                 140

Asp Asp Val Asn Leu Pro Val Asn Thr Trp Arg Thr Trp Val Leu Thr
145                 150                 155                 160

Thr Ile Phe Val Ile Val Phe Ala Ala Val Asn Gln Phe Phe Ser Leu
                165                 170                 175

Arg Tyr Pro Ala Leu Ser Ile Ser Phe Ile Val Ala Gln Leu Ile Leu
            180                 185                 190

Phe Pro Leu Gly Lys Leu Leu Asn Leu Leu Pro Asn Trp Lys Ile Gly
        195                 200                 205

Tyr Gly Arg Phe Ser Phe Tyr Leu Asn Ser Ser Pro Phe Asn Val Lys
    210                 215                 220

Glu His Ala Ala Ile Thr Ile Ala Val Ser Leu Thr Ser Ser Thr Ala
225                 230                 235                 240

Tyr Ala Thr Asn Ile Leu Ser Ala Gln Thr Ser Phe Tyr Lys Gln Asn
                245                 250                 255
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Leu Ser Trp Gly Tyr Lys Ile Leu Ile Val Leu Thr Ser Gln Met Leu
260 265 270

Gly Tyr Gly Phe Ala Gly Leu Thr Arg Arg Trp Ile Val Tyr Pro Ala
275 280 285

Ala Met Ile Trp Pro Gln Thr Leu Val Ser Thr Val Leu Phe Arg Thr
290 295 300

Leu His Gly Asn Ser Gly Asn Asp Ile Gly Val Leu Lys Asn Asn Arg
305 310 315 320

Ile Ser Ala Asn Gly Trp Thr Ile Ser Arg Tyr Arg Phe Phe Ala Tyr
325 330 335

Val Met Ile Gly Ser Phe Val Phe Tyr Trp Phe Pro Gly Phe Ile Phe
340 345 350

Lys Gly Leu Ser Tyr Phe Thr Val Leu Cys Trp Ile Trp Pro Lys Asn
355 360 365

Arg Val Val Asn Gln Leu Phe Gly Tyr Asn Ser Gly Leu Gly Ile Leu
370 375 380

Pro Leu Thr Phe Asp Trp Gln Gln Val Val Tyr Asn Ser Asn Pro Leu
385 390 395 400

Ala Ser Pro Trp Trp Val Ile Cys Asn Thr Phe Gly Ser Val Val Leu
405 410 415

Ile Phe Trp Ile Val Val Pro Ile Leu Tyr Tyr Lys Gly Val Trp Phe
420 425 430

Ser Asn Tyr Leu Pro Met Leu Ser Ser Ser Thr Phe Asp His Thr Gly
435 440 445

Val Ser Tyr Asn Ser Ser Arg Val Leu Asn Ser Asp Tyr Ser Phe Asn
450 455 460

His Thr Lys Tyr Glu Ser Tyr Ser Pro Leu Tyr Met Pro Met Ser Tyr
465 470 475 480

Ser Met Ser Thr Ala Leu Asn Phe Ala Ala Val Thr Ala Ile Phe Thr
485 490 495

His Cys Ala Leu Tyr Asn Gly Lys Asp Ile Trp Gln Arg Leu Trp Lys
500 505 510

Glu Ser Gly Lys Asp Glu Cys Ile His Arg Lys Leu Met Arg Asn Tyr
515 520 525

Lys Glu Ala Pro Gln Trp Trp Tyr Ala Thr Leu Phe Ile Val Val Phe
530 535 540

Gly Leu Thr Ile Phe Thr Val Arg Tyr Tyr Asp Thr Gln Cys Pro Val
545 550 555 560

Trp Ala Leu Ile Val Ala Leu Leu Ile Phe Ile Val Asn Phe Ile Pro
565 570 575

Gln Gly Val Leu Glu Gly Ile Thr Asn Gln His Val Gly Leu Asn Ile

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            580                 585                 590

Ile Thr Glu Leu Ile Gly Gly Tyr Ile Leu Pro Gly Lys Pro Leu Ala
        595                 600                 605

Asn Leu Met Ile Lys Leu Tyr Gly Phe Ile Pro Met Arg Gln Gly Leu
    610                 615                 620

Glu Phe Ser Arg Asp Leu Lys Leu Ala Gln Tyr Met Lys Ile Pro Pro
625                 630                 635                 640

Arg Ile Leu Phe Phe Val Gln Leu Phe Ala Thr Ile Leu Gly Gly Ile
                645                 650                 655

Thr Gln Val Ala Val Gln Glu Trp Met Asn Tyr His Ile Pro Gly Ile
            660                 665                 670

Cys Thr Thr Ser Gln Ser Asn Gly Phe Thr Cys Pro Asn Gly Arg Ser
        675                 680                 685

Ile Tyr Asn Ala Ser Leu Ile Trp Gly Ala Ile Gly Pro Ala Lys Met
    690                 695                 700

Phe Ser Lys Gly Lys Pro Tyr Tyr Pro Leu Ile Phe Phe Phe Leu Ile
705                 710                 715                 720

Gly Ala Val Ala Pro Phe Ile Thr Trp Gly Leu Arg Lys Arg Phe Pro
                725                 730                 735

Lys Ser Trp Ile Gly Lys Leu Asn Ala Pro Val Leu Phe Thr Gly Pro
            740                 745                 750

Gly Asn Ile Pro Pro Ala Thr Gly Ile Asn Tyr Ser Ser Trp Ala Ile
        755                 760                 765

Val Gly Phe Ile Phe Asn Tyr Val Ile Arg Lys Arg Ala Ile His Trp
    770                 775                 780

Trp Arg Lys Tyr Asn Tyr Val Leu Ala Ala Ala Met Asp Ser Gly Val
785                 790                 795                 800

Ala Val Ala Gly Val Val Ile Phe Leu Cys Val Ser Tyr Pro Gly Gly
                805                 810                 815

Lys Ile Thr Trp Trp Gly Asn Thr Val Tyr Thr Lys Thr Tyr Asp Trp
            820                 825                 830

Lys Ser Val Pro Tyr Arg Ser Leu Gly Pro Asn Glu Thr Phe Gly Tyr
        835                 840                 845

Thr Asn Trp
    850


<210> 11
<211> 791
<212> PRT
<213> Schizosaccharomyces pombe

<400> 11
Met Lys Thr Pro Lys Phe Ile Thr Tyr Val Thr Arg Gly Phe Lys Gly
```

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  1               5                  10                  15

Leu Glu Ser Lys Ser Val Glu Asn Asn Lys Asp His Ile Val Glu Asn
            20                  25                  30

Ser Ser Pro Ile Ala Ser Lys Phe His Glu Phe Asp Glu Gln Lys Lys
        35                  40                  45

Ser Phe Glu Ile Ile Asn Tyr Ala Gly His Glu Lys Phe Val Asp Asp
    50                  55                  60

Ile Thr Glu Arg Glu Ser Ser Val Pro Gly Asn Ala Val Tyr Asp Ile
65                  70                  75                  80

Thr Val Arg Asp Ile Asp Ala Ile Val Pro Val Thr Asp Asp Val Asp
                85                  90                  95

Ile Pro Ala Ser Thr Phe Arg Met Trp Ile Leu Ala Phe Gly Leu Ala
            100                 105                 110

Thr Val Ile Ala Gly Val Asp Ala Phe Phe Leu Met Arg Tyr Pro Ser
        115                 120                 125

Val Ser Ile Ala Ala Ile Val Ala Leu Leu Val Ala Tyr Pro Leu Gly
    130                 135                 140

Gln Leu Trp Tyr Tyr Ile Ile Pro Gln Trp Glu Ile Lys Leu Pro Arg
145                 150                 155                 160

Gly Ile Arg Val Ser Leu Asn Pro Gly Arg Phe Asn Arg Lys Glu His
                165                 170                 175

Ala Cys Leu Tyr Ile Phe Val Asn Ile Cys Val Ser Ala Lys Leu Val
            180                 185                 190

Asn Thr Leu Ile Ile Glu Gln Ile Lys Phe Phe Gly Val Asn Ile Gly
        195                 200                 205

Ile Gly Arg Ala Ile Leu Phe Asn Leu Cys Ser Tyr Leu Ser Ser Phe
    210                 215                 220

Gly Trp Ser Gly Leu Ala Leu Pro Ile Leu Val Tyr Pro Pro Thr Leu
225                 230                 235                 240

Ile Trp Pro Ser Val Leu Ser Ser Cys Ala Leu Phe Lys Ile Phe His
                245                 250                 255

Asp Asn Asp Asn Thr Lys Ala Cys Asn Trp Thr Ile Ser Arg Leu Arg
            260                 265                 270

Tyr Phe Phe Ile Val Phe Val Ala Ser Phe Ile Trp Tyr Trp Phe Pro
        275                 280                 285

Asp Leu Ile Phe Pro Ala Leu Ser Ser Leu Gly Ala Trp Ile Ser Trp
    290                 295                 300

Cys Lys Pro Ser Ser Ala Val Leu Ser Gln Ile Phe Gly Val Lys Thr
305                 310                 315                 320

Gly Leu Gly Leu Phe Pro Leu Thr Leu Asp Trp Ala Gln Ile Ser Ser
                325                 330                 335
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Leu Ser Asn Pro Leu Ile Thr Pro Trp Trp Ala Thr Cys Cys Ile Phe
340 345 350

Thr Ser Phe Val Phe Trp Ile Trp Ile Val Leu Pro Gly Leu Tyr Tyr
355 360 365

Gln Asn Tyr Trp Gln Val Ala His Phe Pro Ile Met Thr Asn Ser Ile
370 375 380

Tyr Thr Val Ser Gly Lys Ser Tyr Asp Ala Gln Lys Val Val Asp Ser
385 390 395 400

Lys Trp Glu Leu Val Thr Gln Lys Tyr Gln Glu Tyr Ser Pro Val Met
405 410 415

Leu Pro Ile Ala Phe Ile Ile Asn Ile Ala Leu Ser Leu Gly Ala Phe
420 425 430

Ser Ser Met Met Ile Ser Phe Phe Leu Arg Phe Pro Thr Asp Val Ile
435 440 445

Gln Pro Ile Cys His Val Phe Lys Tyr Ser Asp Ile His Thr Lys Leu
450 455 460

Leu Lys Lys Tyr Lys Arg Val His Trp Gly Phe Tyr Leu Ala Ser Ile
465 470 475 480

Ile Val Ser Leu Gly Leu Gly Phe Ala Phe Thr Glu Gly Trp His Asp
485 490 495

Ile Gln Ile Arg Ser Tyr Gly Phe Val Val Ser Met Val Ile Gly Ala
500 505 510

Ala Leu Tyr Ile Pro Leu Ser Leu Ile Glu Ser Arg Ser Ser Phe Thr
515 520 525

Ile Ser Met Gln Ala Phe Phe Glu Ile Val Ala Ala Phe Trp Phe Asn
530 535 540

Gly Gln Pro Met Ala Leu Leu Tyr Phe Tyr Ser Phe Gly Phe Gly Thr
545 550 555 560

Leu Gln His Ala Met His Met Thr Gln Ser Ala Lys Ile Gly His Tyr
565 570 575

Met Lys Val Pro Pro Arg Leu Val Ala Ala Leu Leu Phe Thr Ser Gly
580 585 590

Ile Trp Ser Ser Leu Val Asn Ser Ala Val Thr Gly Trp Ile Met Tyr
595 600 605

His Val Arg Asp Val Cys Thr Ser Asn Ala Glu Asn Asn Met Thr Cys
610 615 620

Arg Ser Pro Lys Thr Gln Phe Asn Ser His Leu Ile Trp Gly Leu Val
625 630 635 640

Gly Asn His Ile Phe Ser Ser Asp Gly Arg Tyr Ser Phe Val Met Trp
645 650 655

```
Phe Phe Leu Val Gly Ala Val Val Ser Val Val Val Tyr Leu Leu Gln
            660                 665                 670

Ile Ser Phe Pro Lys Ser Ser Trp Lys His Val Asn Pro Ala Leu Leu
        675                 680                 685

Leu Gly Gly Ala Ala Gln Ile Pro Ser Val Thr Gly Ile Asn Tyr Ser
    690                 695                 700

Thr Trp Ala Ala Val Ala Phe Cys Phe Asn Tyr Leu Ile Arg Arg Gly
705                 710                 715                 720

Tyr Tyr Ser Trp Trp Lys Lys Tyr Asn Leu Ile Thr Ala Ala Ala Met
                725                 730                 735

Asp Cys Gly Val Ala Ile Ala Gly Leu Phe Ile Tyr Phe Cys Val Val
            740                 745                 750

Tyr Thr Gly Gly Ser Ser Asn Phe Ser Trp Trp Gly Thr Thr Val Ser
        755                 760                 765

Ser Ala Gly Cys Asp Lys Lys Gly Cys Ala His Leu Ser Val Ser Asp
    770                 775                 780

Ile Ser Lys Pro Ser Gly Trp
785                 790
```

<210> 12
<211> 776
<212> PRT
<213> Schizosaccharomyces pombe

<400> 12

```
Met Ile Gly Ser Ile Asn Glu Ser Pro Ile Glu Glu His Met Asn Asp
  1               5                  10                  15

Ser Pro Ser Thr Lys Glu Lys Ala Asp Ser Val Asp Ile Ser Asp Tyr
             20                  25                  30

Ile Val Ser His Ser Asp Asp Ser Leu Ser Lys Asp Ile Lys Lys Asp
         35                  40                  45

Thr Lys Ser Phe Leu Asp Val Glu His Gly Glu Ile Ser Thr Val Asp
     50                  55                  60

Glu Phe Glu Glu Asp Ser Pro Tyr Pro Glu Val Arg Ala Ala Val Pro
 65                  70                  75                  80

Pro Thr Asp Asp Pro Ser Met Pro Cys Asn Thr Ile Arg Met Trp Thr
                 85                  90                  95

Ile Gly Leu Ile Tyr Ser Thr Val Gly Ala Ala Val Asn Met Phe Phe
            100                 105                 110

Ser Leu Arg Asn Pro Thr Val Thr Leu Ser Val Leu Ile Ser Glu Leu
        115                 120                 125

Leu Ala Tyr Pro Ala Leu Gln Ile Trp Asp Leu Ile Phe Pro Asp Arg
    130                 135                 140
```

Glu Phe Arg Ile Gly Arg Leu Lys Phe Asn Phe Lys Pro Gly Pro Phe
145 150 155 160

Asn Val Lys Glu His Ala Leu Ile Val Val Met Ser Ser Val Ser Phe
165 170 175

Gly Asn Ala Tyr Ser Thr Asp Ile Ile Leu Ala Gln Arg Val His Tyr
180 185 190

Lys Gln Arg Phe Gly Phe Gly Tyr Glu Ile Cys Leu Thr Leu Ala Thr
195 200 205

Gln Leu Ile Gly Tyr Gly Leu Ala Gly Leu Ser Arg Arg Leu Leu Val
210 215 220

Arg Pro Ala Ser Met Leu Trp Pro Val Asn Leu Val Gln Cys Thr Leu
225 230 235 240

Ile Lys Thr Leu His Arg Lys Asp Leu Arg Asn Ala Val Ala Asn Gly
245 250 255

Trp Arg Ile Ser Pro Phe Arg Phe Phe Leu Tyr Val Phe Ile Ala Ser
260 265 270

Phe Ile Trp Asn Trp Phe Pro Ser Tyr Ile Phe Gln Ala Leu Ser Leu
275 280 285

Phe Ala Trp Val Thr Trp Ile Arg Pro Asn Ser Pro Thr Val Asn Gln
290 295 300

Ile Phe Gly Glu Ser Thr Gly Ile Ser Ile Leu Pro Met Thr Phe Asp
305 310 315 320

Trp Asn Gln Ile Ser Ala Tyr Ile Leu Ser Pro Leu Met Ala Pro Ala
325 330 335

Asp Ala Leu Met Asn Ile Leu Leu Gly Val Ile Leu Phe Phe Trp Ile
340 345 350

Val Thr Pro Ala Leu Asn Phe Thr Asn Thr Trp Tyr Gly Asp Tyr Leu
355 360 365

Pro Ile Ser Ser Ser Gly Ile Ile Asp His Phe Gly Asn Ser Tyr Asn
370 375 380

Val Thr Arg Ile Leu Thr Lys Asp Ala Thr Phe Asp Leu Asp Ala Tyr
385 390 395 400

Gln Asn Tyr Ser Pro Ile Phe Met Ser Thr Thr Tyr Ala Leu Ala Phe
405 410 415

Gly Leu Ser Phe Ala Ser Ile Thr Ser Val Ile Phe His Val Ile Leu
420 425 430

Tyr His Gly Lys Glu Ile Tyr Asp Arg Leu Arg Asp Pro Pro Ala Pro
435 440 445

Asp Ile His Glu Lys Leu Met Lys Ala Tyr Asp Glu Val Pro Phe Tyr
450 455 460

Trp Tyr Leu Ser Val Phe Leu Ala Phe Phe Gly Met Met Met Gly Thr

```
465                 470                 475                 480

Ile Tyr Gly Trp Lys Thr Glu Thr Pro Trp Trp Val Ile Ile Val Gly
                485                 490                 495

Val Ile Phe Ser Ala Val Trp Phe Ile Pro Ile Gly Ile Val Gln Ala
            500                 505                 510

Ile Thr Asn Ile Gln Leu Gly Leu Asn Val Phe Thr Glu Phe Ile Val
        515                 520                 525

Gly Tyr Met Tyr Pro Gly Arg Pro Leu Ala Met Met Ile Phe Lys Thr
    530                 535                 540

Val Gly Tyr Ile Thr Met Thr Gln Gly Leu Ala Phe Ala Ala Asp Leu
545                 550                 555                 560

Lys Glu Gly His Tyr Met Lys Leu Pro Pro Arg Ile Met Phe Tyr Thr
                565                 570                 575

Gln Met Ile Ala Thr Ile Trp Ser Cys Phe Val Gln Ile Gly Val Leu
            580                 585                 590

Asp Trp Ala Leu Gly Asn Ile Asp Asn Val Cys Gln Ala Asp Gln Pro
        595                 600                 605

Asp Asn Tyr Thr Cys Pro Asn Ala Thr Val Phe Phe Asn Ser Ser Val
    610                 615                 620

Ile Trp Gly Val Ile Gly Pro Lys Arg Met Phe Ser Gly Lys Asn Thr
625                 630                 635                 640

Tyr Thr Gly Leu Gln Tyr Phe Trp Leu Ala Gly Val Leu Gly Thr Ile
                645                 650                 655

Leu Phe Trp Ala Leu Trp Lys Lys Trp Pro Gln Lys Trp Trp Gly Gln
            660                 665                 670

Leu Asn Gly Pro Leu Ile Phe Gly Gly Thr Gly Tyr Ile Pro Pro Ala
        675                 680                 685

Thr Pro Val Asn Tyr Leu Ala Trp Ser Gly Ile Gly Leu Phe Phe Asn
    690                 695                 700

Tyr Tyr Leu Lys Lys Ile Phe Ala Asp Trp Trp Gln Lys Tyr Asn Phe
705                 710                 715                 720

Thr Leu Ser Ala Leu Asp Thr Gly Thr Gln Leu Ser Val Ile Ile Leu
                725                 730                 735

Phe Phe Cys Leu Gln Leu Pro Met Val Asn Phe Pro Asp Trp Trp Gly
            740                 745                 750

Asn Asp Gly Ala Phe Asn Thr Leu Asp Ala Thr Gly Ala Ala Val Arg
        755                 760                 765

Lys Leu Val Asn Glu Ser Ala Arg
    770                 775
```

<210> 13

<211> 776
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Isp4

<400> 13
Met Ile Gly Ser Ile Asn Glu Ser Pro Ile Glu Glu His Met Asn Asp
1 5 10 15

Ser Pro Ser Thr Lys Glu Lys Ala Asp Ser Val Asp Ile Ser Asp Tyr
20 25 30

Ile Val Ser His Ser Asp Asp Ser Leu Ser Lys Asp Ile Lys Lys Asp
35 40 45

Thr Lys Ser Phe Leu Asp Val Glu His Gly Glu Ile Ser Thr Val Asp
50 55 60

Glu Phe Glu Glu Asp Ser Pro Tyr Pro Glu Val Arg Ala Ala Val Pro
65 70 75 80

Pro Thr Asp Asp Pro Ser Met Pro Cys Asn Thr Ile Arg Met Trp Thr
85 90 95

Ile Gly Leu Ile Tyr Ser Thr Val Gly Ala Ala Val Asn Met Phe Phe
100 105 110

Ser Leu Arg Asn Pro Thr Val Thr Leu Ser Val Leu Ile Ser Glu Leu
115 120 125

Leu Ala Tyr Pro Ala Leu Gln Ile Trp Asp Leu Ile Phe Pro Asp Arg
130 135 140

Glu Phe Arg Ile Gly Arg Leu Lys Phe Asn Phe Lys Pro Gly Pro Phe
145 150 155 160

Asn Val Lys Glu His Ala Leu Ile Val Val Met Ser Ser Val Ser Phe
165 170 175

Gly Asn Ala Tyr Ser Thr Asp Ile Ile Leu Ala Gln Arg Val His Tyr
180 185 190

Lys Gln Arg Phe Gly Phe Gly Tyr Glu Ile Cys Leu Thr Leu Ala Thr
195 200 205

Gln Leu Ile Gly Tyr Gly Leu Ala Gly Leu Ser Arg Arg Leu Leu Val
210 215 220

Arg Pro Ala Ser Met Leu Trp Pro Val Asn Leu Val Gln Cys Thr Leu
225 230 235 240

Ile Lys Thr Leu His Arg Lys Asp Leu Arg Asn Ala Val Ala Asn Gly
245 250 255

Trp Arg Ile Ser Pro Phe Arg Phe Phe Leu Tyr Val Phe Ile Ala Ser
260 265 270

Phe Ile Trp Asn Trp Phe Pro Ser Tyr Ile Phe Gln Ala Leu Ser Leu
275 280 285

```
Phe Ala Trp Val Thr Trp Ile Arg Pro Asn Ser Pro Thr Val Asn Gln
    290                 295                 300

Ile Phe Gly Glu Ser Thr Gly Ile Ser Ile Leu Pro Met Thr Phe Asp
305                 310                 315                 320

Trp Asn Gln Ile Ser Ala Tyr Ile Leu Ser Pro Leu Met Ala Pro Ala
                325                 330                 335

Asp Ala Leu Met Asn Ile Leu Leu Gly Val Ile Leu Phe Phe Trp Ile
            340                 345                 350

Val Thr Pro Ala Leu Asn Phe Thr Asn Thr Trp Tyr Gly Asp Tyr Leu
        355                 360                 365

Pro Ile Ser Ser Ser Gly Ile Ile Asp His Phe Gly Asn Ser Tyr Asn
    370                 375                 380

Val Thr Arg Ile Leu Thr Lys Asp Ala Thr Phe Asp Leu Asp Ala Tyr
385                 390                 395                 400

Gln Asn Tyr Ser Pro Ile Phe Met Ser Thr Thr Tyr Ala Leu Ala Phe
                405                 410                 415

Gly Leu Ser Phe Ala Ser Ile Thr Ser Val Ile Phe His Val Ile Leu
            420                 425                 430

Tyr His Gly Lys Glu Ile Tyr Asp Arg Leu Arg Asp Pro Pro Ala Pro
        435                 440                 445

Asp Ile His Glu Lys Leu Met Lys Ala Tyr Asp Glu Val Pro Phe Tyr
    450                 455                 460

Trp Tyr Leu Ser Val Phe Leu Ala Phe Phe Gly Met Met Met Gly Thr
465                 470                 475                 480

Ile Tyr Gly Trp Lys Thr Glu Thr Pro Trp Trp Val Ile Ile Val Gly
                485                 490                 495

Val Ile Phe Ser Ala Val Trp Phe Ile Pro Ile Gly Ile Val Gln Ala
            500                 505                 510

Ile Thr Asn Ile Gln Leu Gly Leu Asn Val Phe Thr Glu Phe Ile Val
        515                 520                 525

Gly Tyr Met Tyr Pro Gly Arg Pro Leu Ala Met Met Ile Phe Lys Thr
    530                 535                 540

Val Gly Tyr Ile Thr Met Thr Gln Gly Leu Ala Phe Ala Ala Asp Leu
545                 550                 555                 560

Lys Phe Gly His Tyr Met Lys Leu Pro Pro Arg Ile Met Phe Tyr Thr
                565                 570                 575

Gln Met Ile Ala Thr Ile Trp Ser Cys Phe Val Gln Ile Gly Val Leu
            580                 585                 590

Asp Trp Ala Leu Gly Asn Ile Asp Asn Val Cys Gln Ala Asp Gln Pro
        595                 600                 605
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Asp Asn Tyr Thr Cys Pro Asn Ala Thr Val Phe Phe Asn Ser Ser Val
    610                 615                 620

Ile Trp Gly Val Ile Gly Pro Lys Arg Met Phe Ser Gly Lys Asn Thr
625                 630                 635                 640

Tyr Thr Gly Leu Gln Tyr Phe Trp Leu Ala Gly Val Leu Gly Thr Ile
                645                 650                 655

Leu Phe Trp Ala Leu Trp Lys Lys Trp Pro Gln Lys Trp Trp Gly Gln
            660                 665                 670

Leu Asn Gly Pro Leu Ile Phe Gly Gly Thr Gly Tyr Ile Pro Pro Ala
        675                 680                 685

Thr Pro Val Asn Tyr Leu Ala Trp Ser Gly Ile Gly Leu Phe Phe Asn
    690                 695                 700

Tyr Tyr Leu Lys Lys Ile Phe Ala Asp Trp Trp Gln Lys Tyr Asn Phe
705                 710                 715                 720

Thr Leu Ser Ala Leu Asp Thr Gly Thr Gln Leu Ser Val Ile Ile Leu
                725                 730                 735

Phe Phe Cys Leu Gln Leu Pro Met Val Asn Phe Pro Asp Trp Trp Gly
            740                 745                 750

Asn Asp Gly Ala Phe Asn Thr Leu Asp Ala Thr Gly Ala Ala Val Arg
        755                 760                 765

Lys Leu Val Asn Glu Ser Ala Arg
    770                 775
```

<210> 14
<211> 783
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Opt1

<400> 14

```
Met Asp Lys Ile Arg Ala Val Ile Ser Gly Gly Glu Lys Pro Pro Val
  1               5                  10                  15

Asp Thr Asp Asn Asp His Asn Thr Asp Phe Glu Ala Asp Arg Lys Met
             20                  25                  30

Pro Asp Leu Asp Ile Val Val Ser Lys Ser Gln Glu Phe Asp Pro Val
         35                  40                  45

Thr Ser His Leu Val Asn Asp Ile Met Glu Asp Glu Tyr Ala Ala Val
     50                  55                  60

His Val Glu Asp Asp Ser Pro Tyr Pro Glu Val Arg Ala Ala Val Pro
 65                  70                  75                  80

Ser Thr Asp Asp Pro Thr Leu Pro Gln Asn Thr Ile Arg Ala Trp Val
                 85                  90                  95
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Ile Gly Leu Ile Leu Thr Thr Val Gly Cys Gly Met Asn Met Leu Phe
            100                 105                 110

Ser Phe His Ser Pro Ser Phe Ala Ile Thr Thr Phe Val Thr Ser Ile
        115                 120                 125

Leu Ala Trp Pro Ile Gly Asn Phe Trp Ala Trp Ile Val Pro Asp Trp
    130                 135                 140

Lys Ile Phe Gly Ala Ser Leu Asn Pro Gly Pro Phe Asn Val Lys Glu
145                 150                 155                 160

His Thr Ile Ile Thr Ile Met Ala Asn Val Ser Phe Gly Thr Gly Ala
                165                 170                 175

Ala Tyr Ala Thr Asp Ile Leu Leu Ala Gln Asn Met Phe Tyr Lys Ser
            180                 185                 190

Asn Phe Gly Trp Gly Tyr Asn Leu Leu Leu Ile Trp Ser Thr Gln Cys
        195                 200                 205

Ile Gly Phe Ala Phe Gly Gly Val Met Arg Arg Phe Val Val Asp Ser
    210                 215                 220

Pro Gly Ala Ile Trp Pro Leu Asn Leu Val Thr Ala Thr Phe Leu Thr
225                 230                 235                 240

Asn Met His Ile Asn Glu Asn His Thr Ala Asn Gly Trp Lys Ile Ser
                245                 250                 255

Arg Leu Ala Phe Phe Val Ile Val Phe Val Ala Ser Phe Val Trp Tyr
            260                 265                 270

Trp Phe Pro Gly Tyr Ile Phe Gln Ala Leu Ser Tyr Phe Ser Trp Ile
        275                 280                 285

Thr Trp Ile Lys Pro Asn Asn Val Ile Ile Asn Gln Val Phe Gly Ser
    290                 295                 300

Ser Ser Gly Leu Gly Met Ile Pro Asn Asn Ile Ala Leu Asp Trp Asn
305                 310                 315                 320

Gln Ile Ala Gly Tyr Ile Gly Ser Pro Leu Ile Pro Pro Ala Ser Val
                325                 330                 335

Ile Ala Thr Ile Phe Gly Ser Ile Val Leu Ile Phe Trp Ile Val Val
            340                 345                 350

Pro Ala Ile His Tyr Ser Asn Thr Trp Tyr Ser Gln Tyr Leu Pro Ile
        355                 360                 365

Ser Ser Thr Gly Ser Phe Asp Arg Phe Gln Gln Thr Tyr Asn Val Ser
    370                 375                 380

Lys Ile Ile Asp His Lys Thr Leu Ser Phe Asn Glu Ala Glu Tyr Lys
385                 390                 395                 400

Lys Tyr Ser Pro Leu Phe Leu Ser Thr Thr Phe Ala Ile Ser Tyr Gly
                405                 410                 415

Leu Ser Phe Ala Ser Ile Leu Ala Thr Ile Thr His Thr Ile Cys Phe
```

```
            420                 425                 430

His Gly Arg Asp Leu Ile Ala Ser Leu Lys Ala Lys Glu Lys Pro Asp
        435                 440                 445

Val His Asn Arg Leu Met Lys Ala Tyr Lys Pro Val Pro Glu Trp Trp
    450                 455                 460

Tyr Leu Val Val Phe Leu Val Phe Phe Gly Met Ser Ile Ala Thr Val
465                 470                 475                 480

Arg Ala Trp Pro Thr Glu Met Pro Val Trp Gly Leu Val Phe Ala Leu
                485                 490                 495

Ile Ile Ala Ile Ile Phe Leu Leu Pro Val Ala Ile Ile Tyr Ala Lys
            500                 505                 510

Thr Asn Ile Ala Val Gly Leu Asn Val Val Thr Glu Phe Ile Val Gly
        515                 520                 525

Tyr Val Leu Gly Gly Arg Pro Leu Cys Met Met Leu Phe Lys Thr Phe
    530                 535                 540

Gly Tyr Ile Thr Asn Asn Gln Ala Val Thr Phe Val Gln Asp Met Lys
545                 550                 555                 560

Leu Gly His Tyr Met Lys Ile Asp Pro Arg Thr Leu Phe Trp Ala Gln
                565                 570                 575

Phe Ala Ala Thr Ile Trp Gly Ser Leu Val Gln Ile Ala Val Leu Glu
            580                 585                 590

Trp Ala Val Gly Ala Ile Asp Asn Leu Cys Ala Ala Asp Gln Lys Asn
        595                 600                 605

His Tyr Thr Cys Pro Asn Gly Lys Val Phe Phe Asn Ala Ser Ile Ile
    610                 615                 620

Trp Gly Val Ile Gly Pro Gln Arg Gln Phe Ser His Gly Gln Ile Tyr
625                 630                 635                 640

Tyr Gly Leu Leu Phe Phe Phe Ile Ile Gly Ala Val Thr Pro Val Ile
                645                 650                 655

Asn Trp Leu Ile Leu Lys Lys Trp Pro Asn Ser Pro Val Lys Tyr Leu
            660                 665                 670

His Trp Pro Val Phe Phe Ser Gly Thr Gly Tyr Ile Pro Pro Ala Thr
        675                 680                 685

Pro Tyr Asn Tyr Thr Ser Tyr Cys Ala Val Gly Leu Phe Phe Gly Trp
    690                 695                 700

Trp Ile Lys Lys Lys Trp Phe His Trp Trp Ser Lys Tyr Asn Tyr Ser
705                 710                 715                 720

Leu Ser Ala Gly Leu Asp Ile Gly Leu Ala Trp Cys Ser Leu Ile Ile
                725                 730                 735

Phe Leu Cys Leu Ser Leu Thr Asn Thr Asp Phe Pro Ser Trp Trp Gly
            740                 745                 750
```

Asn Asp Val Ile Asn Thr Thr Leu Asp Thr Gln Val Val Thr Asn Ile
755 760 765

Arg His Ile Leu Lys Glu Gly Glu Ala Phe Gly Pro Ser Ser Trp
770 775 780

<210> 15
<211> 798
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: YJL212C

<400> 15
Met Ser Thr Ile Tyr Arg Glu Ser Asp Ser Leu Glu Ser Glu Pro Ser
1 5 10 15

Pro Thr Pro Thr Thr Ile Pro Ile Gln Ile Asn Met Glu Glu Glu Lys
20 25 30

Lys Asp Ala Phe Val Lys Asn Ile Asp Glu Asp Val Asn Asn Leu Thr
35 40 45

Ala Thr Thr Asp Glu Glu Asp Arg Asp Pro Glu Ser Gln Lys Phe Asp
50 55 60

Arg His Ser Ile Gly Glu Glu Gly Leu Val Trp Lys Gly Asp Pro Thr
65 70 75 80

Tyr Leu Pro Asn Ser Pro Tyr Pro Glu Val Arg Ser Ala Val Ser Ile
85 90 95

Glu Asp Asp Pro Thr Ile Arg Leu Asn His Trp Arg Thr Trp Phe Leu
100 105 110

Thr Thr Val Phe Val Val Val Phe Ala Gly Val Asn Gln Phe Phe Ser
115 120 125

Leu Arg Tyr Pro Ser Leu Glu Ile Asn Phe Leu Val Ala Gln Val Val
130 135 140

Cys Tyr Pro Ile Gly Arg Ile Ala Leu Leu Pro Asp Trp Lys Cys Ser
145 150 155 160

Lys Val Pro Phe Phe Asp Leu Asn Pro Gly Pro Phe Thr Lys Lys Glu
165 170 175

His Ala Val Val Thr Ile Ala Val Ala Leu Thr Ser Ser Thr Ala Tyr
180 185 190

Ala Met Tyr Ile Leu Asn Ala Gln Gly Ser Phe Tyr Asn Met Lys Leu
195 200 205

Asn Val Gly Tyr Gln Phe Leu Leu Val Trp Thr Ser Gln Met Ile Gly
210 215 220

Tyr Gly Ala Ala Gly Leu Thr Arg Arg Trp Val Val Asn Pro Ala Ser
225 230 235 240

Ser Ile Trp Pro Gln Thr Leu Ile Ser Val Ser Leu Phe Asp Ser Leu
245 250 255

His Ser Arg Lys Val Glu Lys Thr Val Ala Asn Gly Trp Thr Met Pro
260 265 270

Arg Tyr Arg Phe Phe Leu Ile Val Leu Ile Gly Ser Phe Ile Trp Tyr
275 280 285

Trp Val Pro Gly Phe Leu Phe Thr Gly Leu Ser Tyr Phe Asn Val Ile
290 295 300

Leu Trp Gly Ser Lys Thr Arg His Asn Phe Ile Ala Asn Thr Ile Phe
305 310 315 320

Gly Thr Gln Ser Gly Leu Gly Ala Leu Pro Ile Thr Phe Asp Tyr Thr
325 330 335

Gln Val Ser Gln Ala Met Ser Gly Ser Val Phe Ala Thr Pro Phe Tyr
340 345 350

Val Ser Ala Asn Thr Tyr Ala Ser Val Leu Ile Phe Phe Val Ile Val
355 360 365

Leu Pro Cys Leu Tyr Phe Thr Asn Thr Trp Tyr Ala Lys Tyr Met Pro
370 375 380

Val Ile Ser Gly Ser Thr Tyr Asp Asn Thr Gln Asn Lys Tyr Asn Val
385 390 395 400

Thr Lys Ile Leu Asn Glu Asp Tyr Ser Ile Asn Leu Glu Lys Tyr Lys
405 410 415

Glu Tyr Ser Pro Val Phe Val Pro Phe Ser Tyr Leu Leu Ser Tyr Ala
420 425 430

Leu Asn Phe Ala Ala Val Ile Ala Val Phe Val His Cys Ile Leu Tyr
435 440 445

His Gly Lys Asp Ile Val Ala Lys Phe Lys Asp Arg Lys Asn Gly Gly
450 455 460

Thr Asp Ile His Met Arg Ile Tyr Ser Lys Asn Tyr Lys Asp Cys Pro
465 470 475 480

Asp Trp Trp Tyr Leu Leu Leu Gln Ile Val Met Ile Gly Leu Gly Phe
485 490 495

Val Ala Val Cys Cys Phe Asp Thr Lys Phe Pro Ala Trp Ala Phe Val
500 505 510

Ile Ala Ile Leu Ile Ser Leu Val Asn Phe Ile Pro Gln Gly Ile Leu
515 520 525

Glu Ala Met Thr Asn Gln His Val Gly Leu Asn Ile Ile Thr Glu Leu
530 535 540

Ile Cys Gly Tyr Met Leu Pro Leu Arg Pro Met Ala Asn Leu Leu Phe
545 550 555 560

```
Lys Leu Tyr Gly Phe Ile Val Met Arg Gln Gly Leu Asn Leu Ser Arg
                565                 570                 575

Asp Leu Lys Leu Ala Met Tyr Met Lys Val Ser Pro Arg Leu Ile Phe
            580                 585                 590

Ala Val Gln Ile Tyr Ala Thr Ile Ile Ser Gly Met Val Asn Val Gly
        595                 600                 605

Val Gln Glu Trp Met Met His Asn Ile Asp Gly Leu Cys Thr Thr Asp
    610                 615                 620

Gln Pro Asn Gly Phe Thr Cys Ala Asn Gly Arg Thr Val Phe Asn Ala
625                 630                 635                 640

Ser Ile Ile Trp Ser Leu Pro Lys Tyr Leu Phe Ser Ser Gly Arg Ile
                645                 650                 655

Tyr Asn Pro Leu Met Trp Phe Phe Leu Ile Gly Leu Leu Phe Pro Leu
            660                 665                 670

Ala Val Tyr Ala Val Gln Trp Lys Phe Pro Lys Phe Lys Phe Ala Lys
        675                 680                 685

His Ile His Thr Pro Val Phe Phe Thr Gly Pro Gly Asn Ile Pro Pro
    690                 695                 700

Ser Thr Pro Tyr Asn Tyr Ser Leu Phe Phe Ala Met Ser Phe Cys Leu
705                 710                 715                 720

Asn Leu Ile Arg Lys Arg Trp Arg Ala Trp Phe Asn Lys Tyr Asn Phe
                725                 730                 735

Val Met Gly Ala Gly Val Glu Ala Gly Val Ala Ile Ser Val Val Ile
            740                 745                 750

Ile Phe Leu Cys Val Gln Tyr Pro Gly Gly Lys Leu Ser Trp Trp Gly
        755                 760                 765

Asn Asn Val Trp Lys Arg Thr Tyr Asp Asn Asp Tyr Lys Lys Phe Tyr
    770                 775                 780

Thr Leu Lys Lys Gly Glu Thr Phe Gly Tyr Asp Lys Trp Trp
785                 790                 795


<210> 16
<211> 877
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: YPR194C

<400> 16
Met Ser Glu Thr Tyr Lys Asp Lys Val Ile Ile Asp Glu Lys Val Ser
  1               5                  10                  15

Thr Lys Gly Thr Val Asp Tyr Ala Glu Gly Ala Glu Tyr Ser Glu Arg
             20                  25                  30
```

```
Leu Ser Asn His Ser Ser Asp Phe Ser Gln Trp Tyr Thr Asp Glu Gln
         35                  40                  45

Ile Leu His Phe Met Lys Lys Leu Gly Tyr Glu Asn Arg Thr Leu Val
     50                  55                  60

Asp Ile Pro Glu Asp Val Ala Tyr Ile Leu Lys Lys Met Pro Glu Leu
 65                  70                  75                  80

Thr Leu Glu Asp Ser Phe Lys Ile Leu Lys Asp Ser Ile Ile Tyr Phe
                 85                  90                  95

Lys Asp Asp Glu Asn Ile Pro His Asp Gln Tyr Glu Glu Trp Lys Arg
            100                 105                 110

Leu Val Asp Leu Glu Asp Leu Asp Ser Lys Glu Gly Ile Asp Glu Tyr
        115                 120                 125

Asp Ser Phe Asp Ile Arg Ala Phe Ala Ser Ala Ile Lys Phe His Ser
    130                 135                 140

Pro Tyr Gln Glu Val Arg Ala Val Val Asp Pro Glu Asp Asp Pro Thr
145                 150                 155                 160

Ile Pro Val Glu Thr Phe Arg Ala Tyr Phe Leu Ala Ile Ile Trp Ser
                165                 170                 175

Val Ile Gly Ser Gly Phe Asn Glu Phe Phe Ser His Arg Val Val Ser
            180                 185                 190

Ile Ser Leu Asn Thr Pro Ile Ile Gln Met Phe Leu Tyr Ile Cys Gly
        195                 200                 205

Lys Ala Trp Ala Lys Thr Ile Pro Cys Trp Thr Ile Thr Ile Arg Gly
    210                 215                 220

Arg Lys Tyr Gly Ile Asn Ile Asp Lys Pro Trp Thr Gln Lys Glu Gln
225                 230                 235                 240

Met Phe Ser Thr Leu Leu Tyr Ala Ile Cys Gln Gly Ala Phe Tyr Thr
                245                 250                 255

His Tyr Asn Ile Leu Thr Gln Lys Leu Phe Tyr His Ser Ala Phe Ser
            260                 265                 270

Phe Gly Tyr Gln Phe Leu Leu Ser Leu Ser Val Gln Phe Ile Gly Phe
        275                 280                 285

Gly Phe Ala Gly Ile Leu Arg Lys Phe Val Val Tyr Pro Ala Arg Ala
    290                 295                 300

Leu Trp Pro Thr Val Met Pro Thr Ile Ala Ile Asn Lys Ala Leu Leu
305                 310                 315                 320

Gly Lys Glu Lys His Glu Ser Gly Met Ser Arg Tyr Lys Phe Phe Phe
                325                 330                 335

Leu Thr Phe Phe Ile Met Phe Ile Tyr Asn Trp Phe Pro Thr Tyr Ile
            340                 345                 350

Ile Asn Ile Leu Asn Thr Phe Asn Trp Met Thr Trp Ile Lys Pro Ser
```

```
        355                 360                 365

Asn Ile Asn Leu Ala Asn Ile Thr Gly Gly Val Thr Gly Leu Gly Ile
    370                 375                 380

Asn Pro Ile Ser Ser Phe Asp Trp Asn Val Ile Ser Phe Asn Ser Pro
385                 390                 395                 400

Leu Val Tyr Pro Phe Trp Ser Tyr Leu Thr Gln Tyr Leu Gly Cys Ile
                405                 410                 415

Leu Ala Ala Leu Ile Val Ile Ala Val Tyr Tyr Ser Asn Tyr Met Ser
            420                 425                 430

Cys Gln Tyr Leu Pro Ile Phe Thr Asn Ser Leu Tyr Thr Asn Thr Gly
        435                 440                 445

His Ser Phe Lys Val Thr Glu Val Leu Asp Ser Asp Asn Lys Leu Asp
    450                 455                 460

Val Lys Lys Tyr Gln Ser Tyr Ser Pro Pro Tyr Tyr Ser Ala Gly Asn
465                 470                 475                 480

Leu Val Ser Tyr Gly Ala Phe Ile Cys Ala Tyr Pro Leu Met Ile Thr
                485                 490                 495

Trp Ser Phe Ile Val His Ser Lys Leu Leu Phe Asn Ala Phe Lys Asp
            500                 505                 510

Trp Ala Leu Asn Leu Trp Ala Met Arg Lys Leu Lys Ser Trp Val Thr
        515                 520                 525

Met Phe Lys Ser Asp Tyr Arg Ala Leu Asp Asp Tyr Asp Asp Pro His
    530                 535                 540

Ser Asn Ala Met Lys Asn Tyr Lys Glu Val Pro Asp Trp Trp Tyr Phe
545                 550                 555                 560

Ala Ile Leu Ile Gly Ser Leu Val Val Gly Ile Ala Val Val Glu His
                565                 570                 575

Tyr Pro Thr Asn Thr Pro Val Trp Gly Leu Phe Val Cys Leu Gly Phe
            580                 585                 590

Asn Phe Val Phe Leu Ile Pro Thr Thr Ile Leu Gln Ala Thr Thr Gly
        595                 600                 605

Tyr Ser Phe Gly Leu Asn Leu Leu Ile Glu Met Val Met Gly Tyr Ala
    610                 615                 620

Leu Pro Gly Asn Pro Ile Ala Ile Met Ile Leu Lys Ala Phe Gly Tyr
625                 630                 635                 640

Asn Ile Asp Gly Gln Ala Asp Asn Tyr Val Ser Asn Leu Lys Ile Ala
                645                 650                 655

His Tyr Cys Lys Ile Pro Pro Met Ala Leu Phe Arg Gly Gln Cys Val
            660                 665                 670

Ile Val Phe Ile Gln Ile Phe Val Asn Leu Gly Val Leu Asn Trp Gln
        675                 680                 685
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Ile Ser Asn Ile Lys Asp Phe Cys Thr Pro His Gln Asn Ala Lys Phe
    690                 695                 700

Thr Cys Pro Asp Ala Val Thr Tyr Tyr Asn Ala Ser Val Val Trp Gly
705                 710                 715                 720

Ala Ile Gly Pro Lys Arg Ile Phe Asn Tyr Ile Tyr Pro Ile Phe Lys
                725                 730                 735

Trp Cys Trp Leu Ile Gly Ala Cys Ile Gly Ile Phe Phe Gly Val Trp
            740                 745                 750

Lys Arg Trp Gly Lys Phe Tyr Pro Arg Tyr Phe Asp Pro Met Leu Phe
        755                 760                 765

Val Gly Gly Met Leu Asn Met Ser Pro Pro Tyr Asn Leu Met Tyr Tyr
    770                 775                 780

Thr Ser Gly Met Ile Val Ser Tyr Ile Ser Gln Tyr Tyr Met Lys Arg
785                 790                 795                 800

His His Leu Asn Leu Trp Glu Lys Tyr Asn Tyr Val Leu Ser Ala Gly
                805                 810                 815

Phe Ser Thr Gly Leu Val Leu Ser Ala Ile Ile Ile Phe Phe Ala Val
            820                 825                 830

Gln Tyr Lys Asp Thr Ala Phe Asn Trp Trp Gly Asn Thr Val Pro Tyr
        835                 840                 845

Ala Gly Ala Asp Gly Val Gly Tyr Pro Leu Lys Asn Ile Thr Asp Thr
    850                 855                 860

Ala Asn Gly Tyr Phe Gly Tyr Ala Pro Gly His Tyr Pro
865                 870                 875
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<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: OPT

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cgcactcttt atgatattcc ggaagacgtt gcgtatatcc tcaaaaaaat gcctgaattg 240
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ctaacgcaaa aactctttta ccattctgct ttctcgtttg gctaccaatt tttactttcg 840
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<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Leu Enkphalin

<400> 18
Tyr Gly Gly Phe Met
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<210> 19
<211> 5
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Met Enkephalin

<400> 19
Tyr Gly Gly Phe Leu
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<210> 20
<211> 4
<212> PRT

<213> Unknown Organism

<220>
<223> Description of Unknown Organism: uptake peptide

<400> 20
Gly Gly Phe Leu
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<210> 21
<211> 4
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: uptake peptide

<400> 21
Lys Leu Gly Leu
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<210> 22
<211> 4
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Tyr-Mif-1

<400> 22
Tyr Pro Leu Gly
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<210> 23
<211> 5
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: uptake peptide

<400> 23
Tyr Gly Gly Phe Leu
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<210> 24
<211> 7
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: DPDPE

<220>
<221> MOD_RES
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<223> Pen

<220>
<221> MOD_RES
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<400> 24
Tyr Asp Xaa Gly Phe Asp Xaa
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<210> 25
<211> 7
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: DADLE

<400> 25
Tyr Asp Ala Gly Phe Asp Leu
1 5

<210> 26
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: motif

<220>
<223> Xaa represents a variable amino acid

<400> 26
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